JPRS 82245

16 November 1982

USSR Report

AGRICULTURE

No. 1359

FBIS FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semimonthly by the NTIS, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

Soviet books and journal articles displaying a copyright notice are reproduced and sold by NTIS with permission of the copyright agency of the Soviet Union. Permission for further reproduction must be obtained from copyright owner.

JPRS 82245

16 November 1982

USSR REPORT

AGRICULTURE

No. 1359

CONTENTS

MAJOR CROP PROGRESS AND WEATHER REPORTING

Cultivation of Soybeans in North Caucasus
(Nikolay Maksimovich Zhadanov; EKONOMIKA SEL'SKOGO KHOZYAYSTVA, Aug 82) 1

POST HARVEST CROP PROCESSING

Storage of Potatoes in Belorussia, RSFSR Discussed
(A. Glazkov, et. al.; SEL'SKAYA ZHIZN', 2 Sep 82) 7

LIVESTOCK FEED PROCUREMENT

Feed Quality Inspection in Estonia Indicates Deficiencies
(S. Eynblau; SOVETSKAYA ESTONIYA, 26 Aug 82) 11

Widespread Introduction of Tower Method of Haylage Storage Urged
(L. Pogorelyy; SEL'SKAYA ZHIZN', 30 Sep 82) 15

Use of Corn for Silage in Moldavia Discussed
(Ye. Antonishin; SOVETSKAYA MOLDAVIYA, 1 Sep 82) 18

Solving Livestock Feed Problems in Armenia
(V. Araksyan; KOMMUNIST, 20 Aug 82) 21

LIVESTOCK

Protecting Livestock Against Dangerous Diseases
(P. Kartashov; SEL'SKAYA ZHIZN', 7 Sep 82) 25

Commentary on Estonian Livestock Production Deficiencies
(SOVETSKAYA ESTONIYA, 15 Sep 82) 28

AGRO-ECONOMICS AND ORGANIZATION

Effective Measures for Accelerating Agricultural Production
(N. Smetanin; PLANOVOYE KHOZYAYSTVO, Sep 82) 32

AGRICULTURAL MACHINERY AND EQUIPMENT

Fuel Conservation in RSFSR Agricultural Equipment Asked
(I. Popov; SEL'SKAYA ZHIZN', 24 Aug 82) 42

CULTIVATION OF SOYBEANS IN NORTH CAUCASUS

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 8, Aug 82 pp 86-88

/Article by Nikolay Maksimovich Zhadanov, candidate of economic sicences, senior scientific associate of the All-Union Scientific Research Institute of Oil-Bearing Crops imeni V. S. Pustovoyt: "Distribution of Soybeans in Northern Caucasus"/

/Text/ The areas where soybeans are planted and produced in the Northern Caucasus Economic Region have increased significantly during the years of the 10th Five-Year Plan. While under the 9th Five-Year Plan the average annual area planted in this crop was 3,100 hectares and the gross yield of beans was 2,200 tons, under the 10th Five-Year Plan these figures were 23,200 hectares and 21,000 tons, respectively. In 1980 the areas planted in soybeans increased to 41,900 hectares and the production of beans increased to 32,500 tons, or 15-fold as compared to the average annual level under the 9th Five-Year Plan. But the demand of the farms for this high-protein feed for livestock are far from being satisfied. The productivity of soybeans remains low. One of the main reasons for this is that they are planted on various areas without taking into account the requirements of the crop for climate and soil conditions and especially moisture conditions.

Research conducted by scientists of the All-Union Scientific Research Institute of Oil-Bearing Crops imeni V. S. Pustovoyt and other institutes have established that the strains of soybeans that have been regionalized in the Northern Caucasus Economic Region can produce high and stable yields of beans on non-irrigated land only in those regions where there are 350-400 mm of precipitation during the growing period, including 190-200 mm during the period of blossoming and formation of the beans; the period with temperatures higher than 15 degrees centigrade must last 130-150 days, and the average daily temperature during the middle of the growing period should reach 21-23 degrees centigrade. The reaction of the soil environment should then be neutral. (V. M. Stepanova, "Bioklimatologiya soi" /Bioclimatology of Soybeans/, 1972, p 111).

An analysis of the data obtained as a result of comparing the soil and climate conditions required for cultivating strains of soybeans that have been regionalized here with the actual data, and also data concerning the productivity of soybeans on the kolkhozes, sovkhozes and state strain testing networks made it possible to single out for each kray, oblast and autonomous republic of the Northern Caucasus regions whose natural conditions provide for obtaining large and stable yields. Thus in Krasnodarskiy Kray one can include among the regions favorable for cultivating soybeans on nonirrigated land Belorechenskiy, Giaginskiy, Koshekhabl'skiy, Uspenskiy, Labinskiy, Mostovskiy, Maykopskiy, Otradnenskiy, Apsheronskiy (with the exception of the mountainous part) and also the southern part of Abinskiy, Severskiy, Teuchezhskiy, Kurganinskiy and Novokubanskiy rayons. During the growing period for soybeans (May-September) more than 350 mm of precipitation fall here, including more than 130 mm during the time of blossoming and formation of the beans (July-August). The hydrothermal coefficient during these months is 1-1.6. All this shows that in this group of rayons the fact that the quantity of precipitation is adequate for the normal growth and development of the soybeans excludes the possibility of shedding of blossoms and beans.

The temperature conditions have an extremely favorable effect. The duration of the period of effective temperatures (above 15 degrees centrigrade) is 120-135 days, which makes it possible to raise not only early ripening (Ranyaya 10), but also medium ripening (Nepolegayushchaya 2) strains.* The total air temperature higher than 10 degrees centigrade reaches 2,700-3,000 degrees, and higher than 15 degrees centigrade--2,400-2,800 degrees. According to the research of V. B. Yenken (1959), the optimal average daily air temperature during the period of blossoming and formation of the seeds, which, mainly in July, should be 21-25 degrees centigrade. In the aforementioned group of rayons the air temperature during this month is 22-24 degrees centigrade.

Adequate heat and moisture for the soybean crops and also favorable soil (mainly carbonate and weakly leached chernozem) make it possible, with the observance of cultivation technology, to obtain more than 15 quintals of beans per hectare here without irrigation. For example, the Pobeda kolkhoz in Severskiy Rayon, where all these conditions are favorable for the cultivation of soybeans, on an average for 1978-1980 from an area of 30 hectares they harvested 15.5 quintals of beans per hectare; on the Rossiya kolkhoz in Belorechenskiy Rayon on an average for 1979-1980 from an area of 65 hectares--17.7 quintals per hectare; the Put' Il'icha kolkhoz in Labinskiy Rayon in 1979 from an area of 100 hectares--19.6 quintals per hectare; and the Labinskiy Sovkhoz-Tekhnikum from an area of 60 hectares--23.5 quintals per hectare.

The possibilities of obtaining large yields of soybeans without irrigation in this group of rayons is also shown by data from the Giaginskiy strain testing station which, on an average for 1979-1980, harvested 17.4 quintals of soybeans per hectare, including from the Komsomolka strain which produced 24.3 quintals of grain per hectare in 1979.

At the same time one cannot but note that only 23.3 percent of all the areas planted in soybeans in the kray are planted in rayons that are favorable for their cultivation. Our calculations show that if the kolkhozes and sovkhozes of this group of rayons were to plant only one field of the field crop rotation in soybeans, it would be possible to plant more than 50,000 hectares in them and produce no less than 75,000 tons of beans a year (with a productivity of 15 quintals per hectare).

---

*Here and subsequently only strains that have been regionalized in specific rayons are mentioned.

On the rest of the territory of the kray the temperature conditions are also favorable for the cultivation of soybeans and make it possible to raise even the late ripening strains (for example, the Komsomolka strain). But the moisture conditions are inadequate for this crop. During the growing period there are from 150-325 mm of precipitation, and during the time of blossoming and formation of the beans--59 to 120 mm, which is considerably less than is required. Such a quantity of precipitation does not provide for normal growth and development of the plant's vegetative organs, which leads to a reduction of the formation of blossoms and beans and leads to subsequent shedding of some of them. Therefore in the majority of cases on the farms of this part of the kray the yield of soybeans on nonirrigated land amounts to from 0.5 to 5 quintals per hectare and the production cost of one quintal of them significantly exceeds the procurement prices.

Yet, as testing in the state strain testing network and the practice of the kolkhozes and sovkhozes has shown, with irrigation and observance of progressive technology for the cultivation of soybeans here, it is possible to obtain bean yields of more than 20 quintals per hectare. Thus at the Timashevskiy strain testing station on an average for four years (1977-1980) with irrigation they obtained 22.1 quintals of beans per hectare, and at the Tikhoretskiy--25 quintals per hectare. On the Ladozhskiy sovkhoz in Ust'-Labinskiy Rayon and the Ventsy-Zarya sovkhoz in Gul'kevichskiy Rayon on large areas (420 hectares each) on an average for 1976-1980 they obtained 20 and 21.7 quintals of soybeans per hectare, respectively; on the Kolkhoz imeni Il'ich and the Vtoraya pyatiletka sovkhoz in Leningradskiy Rayon in 1980--22 and 26 quintals per hectare, respectively; and on the Umanskiy sovkhoz--33.8 quintals per hectare. The production cost of 1 quintal of soybeans on the last farm was 7.69 rubles. With a procurement price of 350 rubles for 1 ton of grain and its salability equal to 60%, the sovkhoz can obtain a profit of 500-550 rubles per hectare just from the sale of soybeans to the state.* But it should be noted that in this part of the kray, which is distinguished by a great shortage of the moisture that is necessary for cultivating soybeans, only 42.5 percent of the areas are planted on irrigated land. The rest of the area on which the kolkhozes and sovkhozes raise this crop does not have irrigation and there are gross violations of technology, as a result of which they do not harvest a considerable part of the possible amount of grain.

In Stavropol'skiy large yields of soybeans can be obtained from nonirrigated land in Adyge-Khabl'skiy, Khabezskiy, Prikubanskiy and also the southwestern part of Predgornyy, Shpakovskiy, Kochubeyevskiy, Mineralovodskiy and the suburban zone of Urupskiy, Zelenchukskiy, Karachevskiy and Malokarachayevskiy rayons. This group of rayons has mainly Caucasian chernozem soil and the supply of moisture in the soil is extremely favorable for the cultivation of soybeans. During the growing period there are more than 350 mm of precipitation here, including some 130-180 mm during the time of blossoming and formation of the beans. The sufficient supply of moisture for soybeans is also shown by the hydrothermal coefficient which during the growing period is equal to 1-1.5.

---

*The profit was calculated conventionally since the kolkhozes and sovkhozes here are raising soybeans only for their own consumption so far.

The temperature conditions are favorable in this group of rayons. The total air temperature above 10 degrees centigrade during the growing period is 2,600-2,950 degrees and above 15 degrees centigrade--2,200-2,600 degrees. The duration of the period with temperatures above 15 degrees centigrade is 115-130 days. The average monthly temperature in July is 21-22 degrees centigrade. All this makes it possible to cultivate not only medium ripening strains (Volna), but also early ripening strains (Ranyaya 10) and obtain up to 20 quintals of beans per hectare on unirrigated land. This is shown by data for the Kochubeyevskiy strain testing station where on an average for four years (1974-1977) they harvested 20 quintals of soybeans per hectare.

The kolkhozes and sovkhozes of these rayons have begun to cultivate soybeans only in recent years, but they are already receiving large yields. Thus the Polyarnaya Zvezda kolkhoz in Kochubeyevskiy Rayon in 1980 harvested 11 quintals of soybeans from each of 80 hectares and the Kaz'minskiy kolkhoz in the same rayon harvested 16.2 quintals from each of 200 hectares.

Despite the fact that it is possible to obtain large yields of soybeans in this zone without irrigation, only 13 percent of the areas planted in them in Stavropol'skiy Kray are located here.

The temperature conditions are favorable for cultivating this crop on the rest of the territory. The total air temperatures above 10 degrees centigrade are 2,900-3,200 degrees, and above 15 degrees centigrade--2,600-2,860 degrees. The duration of the period with effective temperatures (above 15 degrees centigrade) is 130-140 days. This makes it possible to raise here not only medium ripening strains (VNIISK 1), but also late ripening strains (Komsomolka). The average monthly air temperature during the hotest month of the year, July, is within the range of the optimal--22-24 degrees centigrade. But the supply of moisture far from satisfies the crop's need for it. During the growing period 160-300 mm of precipitation fall here, including 60-120 mm during the period of blossoming and formation of the beans. In other words, on this territory of the kray the shortage of moisture for the growth and development of the soybean plants is 33.3-54 percent during the growing period and 40-66 percent during the period of blossoming and formation of the beans. This shortage of soil moisture with high air temperatures during the summer period leads to weak growth and development of the plants, considerable losses of blossoms and beans, and in the majority of cases the yield of beans is from one to six quintals per hectare, and sometimes the plants die. Therefore, in order to obtain large and stable yields of beans in this group of rayons of the kray, it is necessary to cultivate soybeans only with irrigation.

The combination of favorable temperature conditions and good soil, mainly southern and Caucasian chernozems, makes it possible, with the observance of technology for cultivation and irrigation conditions, to obtain more than 20 quintals of soybeans per hectare. Thus on the Druzhba kolkhoz in Sovetskiy Rayon in 1980 from an area of 70 hectares they harvested 22.6 quintals of beans of this crop per hectare, and at the Izobil'nenskiy strain testing station on an average for 1979-1980 they raised a bear yield of 28 quintals per hectare. But only 23 percent of the areas planted in soybean in these rayons of the kray were planted on irrigated land in 1981. On the rest of the area the kolkhozes and sovkhozes cultivated them without irrigation and with gross violations of technology, which led to obtaining poor yields. Let us give an example. The Rossiya kolkhoz in Novoaleksandrovskiy Rayon, observing the technology for raising soybeans and the irrigation conditions recommended by science, in 1980 raised 16.4 quintals of soybeans from each of 200 hectares, while the Druzhba kolkhoz in the same rayon, because of violations of the technology and the cultivation of soybeans without irrigation, obtained only 3.8 quintals of beans from each of 211 hectares, or barely one-fifth as much.

In the autonomous republics of the Northern Caucasus there are also rayons whose natural conditions make it possible to obtain large yields of regionalized strains of soybeans without irrigation. These rayons include Urvanskiy, Sovetskiy, Chegemskiy and Baksanskiy rayons in the Kabardino-Balkar ASSR (foothill part), all rayons of the North Osetian ASSR (with the exception of Mozdokskiy), and also Nazranovskiy, Sunzhenskiy, Achkhoy-Martanovskiy, Urus-Martanovskiy, Shalinskiy, Nozhay-Yurtovskiy, Vedenskiy and Sovetskiy rayons in the Checheno-Ingush ASSR (with the exception of the mountainous part).

In this group of rayons the moisture supply is quite adequate for the cultivation of soybeans. During the growing period here there are more than 350 mm of precipitation, including 130-200 mm during the period of blossoming and formation of the beans. The hydrothermal coefficient is equal to 1.1-1.7. The total temperatures above 10 degrees centigrade is within the range of 2,600-2,900 degrees, and above 15 degrees centigrade--2,200-2,700 degrees. The average monthly temperature in July is 21-23 degrees centigrade and the duration of the period with temperatures above 15 degrees centigrade is 120-140 days. All this makes it possible to raise not only early ripening (Ranyaya 10), but also medium ripening (Severo-Osetinskaya 132, Plamya) strains of soybeans and to obtain more than 15 quintals of beans per hectare on unirrigated land. For example at the Baksanskiy strain testing station in the Kabardino-Balkar ASSR on an average for three years (1977-1979) they obtained 15.5 quintals of soybeans per hectare; on the Kolkhoz imeni Shogentsukov in Baksanskiy Rayon in 1979 on an area of 20 hectares--17.7 quintals per hectare; and on the Leninskiy put' kolkhoz in Urvanskiy Rayon on an area of 20 hectares--17.5 quintals per hectare.

In the rest of the rayons of the aforementioned autonomous republics and throughout the territory of Rostov Oblast the temperature and soil conditions are favorable for the cultivation of soybeans and make it possible to cultivate not only medium ripening, but also late ripening strains such as Nepolegayushchaya 2, Vysokoroslaya 1 and VNIISK 1. But the moisture supply is far from adequate for raising them here. Thus during the growing period the supply of moisture in the soil is 64-27 percent of the required amount, including during the time of blossoming and formation of the beans--82-68 percent. Therefore in order to obtain large and stable yields of beans it is necessary to cultivate soybeans here only with irrigation.

Thus at the Khasavyurtinskiy strain testing station in the Dagestan ASSR on an average for 1977-1979 with irrigation they obtained a yield of soybeans of 17.6 quintals per hectare; at the Mozdokskiy strain testing station in the North Osetian ASSR on an average for 1979-1980--17.4 quintals per hectare; at the Semikarakorskiy strain testing station in Rostov Oblast on an average for 1977-1980--29.2 quintals per hectare; and at the Gudermesskiy strain testing station of the same republic, on an average for 1977-1979--25.6 quntals per hectare. The kolkhozes and sovkhozes obtain large yields on irrigated sections. In 1979 the Leninskaya kuznitsa kolkhoz in Prokhladnenskiy Rayon in the Kabardino-Balkar ASSR obtained 16.8 quintals of soybeans per hectare from an area of 20 hectare; the Znamya Lenina kolkhoz in Mozdokskiy Rayon in the North Osetian ASSR obtained 18.2 quintals per hectare from an area of 10 hectares; the Kolkhoz imeni Lenin in Neklinovskiy Rayon in Rostov Oblast in 1980 obtained 23 quintals per hectare from an area of 100 hectares; and the Don sovkhoz in Tsimlyanskiy Rayon in the same oblast obtained 31.6 quintals per hectare from the same amount of area.

Planting soybeans in the North Caucasus economic region, taking into account the biological requirements these plants have for climate and soil, and also with the observance of the technology for cultivation will make it possible to significantly increase the production of beans and augment the feed balance for animal husbandry with vegetable protein.

COPYRIGHT: Izdatel'stvo "Kolos" "Ekonomika sel'skogo khozyaystva," 1982

11772
CSO: 1824/547

POST HARVEST CROP PROCESSING

STORAGE OF POTATOES IN BELORUSSIA, RSFSR DISCUSSED

Moscow SEL'SKAYA ZHIZN' in Russian 2 Sep 82 pp 1, 2

/Article by an inspection brigade consisting of A. Glazkov, V. Dadykin, V. Legan'kov and B. Svishchev: "A Roof for Potatoes"/

/Text/ Good quality and modern storehouses having progressive storage systems are required in particular for potatoes: indeed the losses being sustained in this valuable product today are considerable and they are being reduced only slowly. Why is it that genuine concern is not being displayed in all areas for protecting the "secondary grain"?

Belorussia is one of the chief potato producing zones of the country and each year its farms supply the state with more than 2 million tons of tubers, with a considerable portion of them being for seed purposes.

"During the current five-year plan, we plan to build potato storehouses for 93,000 tons at sovkhozes and for another 55,000 tons using the resources of kolkhozes and Gosbank credit" reported the deputy chief of the Main Administration for Capital Construction of the BSSR Ministry of Agriculture N.I. Zhabin.

In view of the large gross yields in potatoes, it can be stated directly that these plans are more than humble. How are they being carried out? Alas, the results are by no means pleasing. Last year, instead of the planned 24,000 tons of capacity for all financing sources, only 21,200 tons were introduced into operation. This year the plan for the first 6 months was fulfilled by less than one half. From year to year, these same plans are not being carried out on farms in Brest and Grodno Oblasts. For example, the erection of a potato storehouse for 3,000 tons at the Svetlyy Put' Experimental Base in Pruzhanskiy Rayon in Brest Oblast has become a truly long term construction project. The contractor -- the Brestsel'stroy Trust of the BSSR Minsel'stroy /Ministry of Rural Construction/ commenced operations 3 years ago and still has not completed the work.

Nor does the work always proceed well at current construction projects being carried out using the economic method. It goes without saying that the work superintendents refer quite properly to the lowered norms for support and at times simply to a shortage of construction materials and to the unsatisfactory fulfillment by the capital construction departments of a number of rayon executive committees of the functions of a single client. It is here that the Main Administration for Capital Construction of the BSSR Ministry of Agriculture should exert its influence and require those who are remiss to ensure that the projects are placed in operation in a timely manner and where necessary -- to furnish efficient and specific assistance.

The BSSR Ministry of the Fruit and Vegetable Industry bears a great amount of responsibility with regard to ensuring that the population is continuously supplied with potatoes. Aware of their tasks, the branch's enterprises are striving to strengthen the logistical base as rapidly as possible; indeed storehouses are available for only 71 percent of the crop. The local organs of government have allocated 1.3 million rubles worth of state capital investments over and above the established limits for the construction of potato storehouses. These funds are being used for erecting large storehouses in Minsk, Bobruysk, Polotsk, Vileyka and Slutsk. Unfortunately, the majority of them will not be ready for operation by winter. The chief reason -- failure to provide the installations with the required contractual work limits and construction materials. Considerable assistance could be provided by the industrial enterprises by following the example set by the Minsk Motor Vehicle Plant, which undertook to provide support for the erection of a standard potato storehouse for 1,000 tons. It is unfortunate that the workers at the motor vehicle plant have very few followers.

During the past few years, clamping sites have been established in Belorussia which are equipped with forced ventilation for 270,000 tons and, as well, potato storehouses for 450,000 tons have been built. Nevertheless, this base is clearly inadequate. Indeed, more than 300,000 tons of the seed alone that is stored in traditional clamps spoils each year and is relegated to the refuse heap. If one takes into account the labor and funds required for their production, then such losses are equivalent to excluding from use approximately 20,000 hectares of fertile arable land. This automatically leads one to think that all too high a price is being paid for the slow manner in which the storehouses are being built.

Many farms in the nonchernozem zone of the RSFSR are presently displaying concern for preserving the "secondary grain." Thus the workers in Kostroma Oblast annually harvest more than 200,000 tons of potatoes, of which amount several tens of thousands of tons are wasted or end up on the refuse heap. It is by no means an accident that potatoes do not reach the stores in Kostroma until May, despite the fact that in other cities throughout the oblast they disappeared from the counters in April.

Nor is the situation any better with regard to the storage of potatoes at public catering enterprises in the oblast center. There are storehouses for 1,620 tons of tubers and yet a capacity for 3,160 tons is required for continuous operations by the public catering enterprises. And these must not be storage facilities such as are found at the Tekstil'mash and Rabochiy Metallist table potato plants -- in the basements of homes and in decrepit facilities where it is impossible to ensure preservation of the products even until the middle of winter. At the same time, the contractor -- Construction-Installation Administration No 6 of the Rostorgstroymontazh Trust -- is not displaying concern for the timely placing in operation of storehouses having refrigeration units for 1,600 tons.

Quite often the Kostroma Gorplodoovoshchtorg and local kolkhozes and sovkhozes are unable to find organizations willing to build these installations. The builders harbor the opinion that such storehouses are simple in nature and that only limited resources are required for their erection. As a result, almost annually the construction projects are moved from one plan to another. On the farms the plans call for the placing in operation, by the end of the year, storehouses having a capacity of only 7,300 tons, with one half of this capacity being built using the economic method.

"The rates of construction for the storehouse facilities are low" stated the deputy chief of the oblast agricultural administration V.A. Denisov, "At the beginning of the five-year plan it was possible to place only one half of the grown potatoes in storage, by the end of the five-year plan the plans call for 159,000 tons to be laid away annually and in the meantime the plans call for only 30,000 tons of storage space to be built. Almost the same amount of tubers will remain "neglected."

The lack of coordination in the plans for growth in procurements and in the storage base for potatoes is once again leading to an overloading of the existing storehouses and forcing the Kostroma workers to store their potatoes in basements and clamps. Hence, once again the losses are inevitable. We recall our visit during the spring to the Andreyevskiy Kolkhoz potato storehouse in Susaninskiy Rayon. Practically no marketable potatoes remained there; large quantities of them had rotted.

A lack of organization in the storage of potatoes is often observed even at those kolkhozes and sovkhozes which long ago learned how to obtain record yields. Thus, in Bryansk and Smolensk Oblasts, a critical shortage in modern storehouse space is being experienced at specialized farms which have been praised for their considerable yields of the "secondary grain." At the Talashkino Sovkhoz in the suburbs of Smolensk there is only one small storehouse for 500 tons, where the potatoes are stored together with the vegetables. Such a "technology" leads to an unjustifiably high level of waste products. For over a year now, the director of the sovkhoz, F. Stepanov, has been unable to include in his construction plan a facility for the farm's leading crop.

In all areas, especially in Moscow and Leningrad Oblasts, a high level of effectiveness has been achieved in the preservation of products in storehouses built in the areas where the products were produced. In such instances, the potato losses do not exceed 2 percent. Worthy of note is the dissemination of the experience accumulated at the Kurgan office of Gorplodoovoshchtorg, the collective of which achieved a high level of preservation for the "secondary grain" -- with the losses in stored products here amounting to less than 1 percent. Prior to the new crop and with a minimum of waste, potatoes are being maintained in bins having a controlled temperature and ventilation in Klaypeda in the LiSSR. The experience of leading farms and enterprises convincingly reveals that only good quality storehouses should be built and that a conversion should be made over to the use of prefabricated materials.

Up until now, the processing of potatoes and the production of flakes and fine grits from them, with the subsequent production of various food products, have been carried out in a very weak manner. Indeed, in the case of such production, a good half of the potatoes could be processed into various nutritional products in the areas of their production. Thus there would be no need for a large number of storehouses and losses could be reduced.

September has arrived. An inspection should now be carried out to ensure the readiness of the granaries to keep the counters supplied with goods during the winter. In many areas, such an audit will not produce any joy. Judge for yourself: at sovkhozes and other agricultural enterprises in the Russian Federation, the plans for this year call for the placing in operation of vegetable and potato storehouses for 267,150 tons. Over a period of 7 months the builders have supplied a capacity for only 19,700 tons, including in the nonchernozem zone -- for 16,000 tons. There is no denying that these are not very rapid rates. The work of erecting and placing storehouses in operation is proceeding slowly in Vladimir, Kalinin, Ulyanovsk, Perm, Tyumen, Irkutsk, Sakhalin and a number of other oblasts. Meanwhile, the time is at hand for harvesting and placing the potatoes in storage. The "secondary grain" harvest from more than 3 million hectares promises to be good and serious concern must be displayed for ensuring that the crop is properly preserved.

7026
CSO: 1824/20

LIVESTOCK FEED PROCUREMENT

FEED QUALITY INSPECTION IN ESTONIA INDICATES DEFICIENCIES

Tallinn SOVETSKAYA ESTONIYA in Russian 26 Aug 82 p 2

/Article by S. Eynblau, head of the Agricultural Department of the People's Control Committee for the Estonian SSR: "How We Prepare Grass Meal"/

> /Text/ Results of an inspection by the USSR KNK /komitet narodnogo kontrolya; people's control committee/ and the ESSR KNK.

In carrying out the party's agrarian policies and the tasks called for in the USSR food program, the kolkhozes and sovkhozes in our republic are performing serious work in connection with further increasing the production and improving the quality of feed, as the foundation for highly developed livestock production operations.

In July the union people's control committee, jointly with our republic and local people's control committees, conducted a thorough study at 30 kolkhozes and sovkhozes and at two grain products combines on the course of procurement operations and on the quality and storing of grass meal. Why exactly this type of feed? There is a very simple answer. Protein-vitamin grass meal, as an additive to the principal feed, makes it possible to balance a ration not only in terms of protein but also vitamins. Hence it plays a great role in improving the feeding for animals and poultry.

The logistical base for the production of grass meal has been strengthened in Estonian agriculture. It is sufficient to state that at 224 of the 296 farms in the republic there are presently 304 drying units, 247 granulators and 586 highly productive E-301 and E-280 harvesting machines. Many farms have accumulated positive experience in the preparation of artificially dehydrated feed of high quality, low production costs and also experience in employing the feed in an efficient manner.

Thus, at the support-demonstration Vinni Sovkhoz-Technical School, in conformity with an all-round program for the development of feed production during the 1978-1985 period, 2,200-2,500 tons of granulated grass meal and briquettes of mainly quality grades I, II and III are being produced annually. On an area of 400 hectares, use is being made here of a green conveyer line consisting of a mixture of pulse and cereal and pulse perennial grasses of different ripening periods. This makes it possible to obtain three cuttings and from the first days of June to September to provide high quality raw material for around-the-clock operation of two drying units (SB-1.5 with OGM-1.5 granulators. A mechanized brigade consisting of 1 [illegible] under the direction of the head of the feed briquetting department has been created for the production of artificially dried feed at the sovkhoz. It has its own laboratory for analyzing the raw materials and finished products.

All of this is making it possible to obtain more than 4 tons of feed units from each hectare harvested for grass meal. Last year, each ton of this product cost the sovkhoz 74 rubles and 30 kopecks, with the average sales price being 130 rubles. The use of high quality grass meal as an additive in the rations for animals is producing great economic results.

The Saverna Kolkhoz in Pylvaskiy Rayon, the Sovkhoz-Technical School imeni Yu. Gagarin and other farms are successfully coping with the task for producing high quality meal and they are using it in an efficient manner.

At the same time, an inspection has revealed that a majority of the republic's kolkhozes and sovkhozes do not have an efficiently developed program for the development of feed production. Many of the farms and rayons inspected, similar to the republic as a whole, are regularly failing to fulfill their tasks for the production of grass meal. A lag was observed in this regard in 1980 and 1981. Nor is the situation any better this year with regard to fulfilling the plans for grass meal production. According to the situation on the day of the inspection -- 26 July -- of 82,400 tons, only 57,400 tons of meal or 70 percent were produced.

One of the chief causes of non-fulfillment of the established tasks is inefficient equipment utilization on many of the farms. As a rule, the work is organized in one shift and the machines often lie idle. The technical status of many drying units is unsatisfactory; a majority of them lack control-measurement instruments and, as a result, the heat regime for the drying work is disrupted and overheating of the fuel occurs. At the time of the inspection, for example, at the Sovkhoz imeni V. Sassi, an AVM-1.5 unit had been lying inactive for more than 2 weeks owing to a defective drum and at the Kuusalu Kolkhoz two drying units and a granulator were inoperable.

Scientific studies carried out at a number of institutes throughout the country and practical experience have established the fact that it is economically feasible to produce and use meal as a feed component only if its quality is of grade I or II. However, at a majority of the farms which we inspected proper attention is not being given to the quality of the grass meal, considerable quantities of grade IV and V meal are being produced and also sub-standard meal.

The quality of the grass meal is especially low at kolkhozes and sovkhozes in Khar'yuskiy, Pylvaskiy and Vyruskiy Rayons, where last year from 39 to 51 percent of the meal produced was classified as being of sub-standard quality. At a number of farms, the quality of the meal is not being improved this year. Thus, at the Mooste Sovkhoz, 300 tons of this product were shipped for analysis and classified as being of sub-standard quality and a similar classification was rendered for 200 tons at the Orava Sovkhoz. Last year, on farms in Tartuskiy Rayon, of 4,600 tons of meal checked at a laboratory, 492 tons or 10 percent were classified as being sub-standard and this year -- almost 20 percent.

One of the chief causes of low quality vitamin grass meal, as revealed by a study carried out in the various areas, is the absence of a green conveyer line at many farms. In the majority of instances, the farms use old and overripe perennial grasses which are poor in nutrients for artificial drying purposes. The grass dryers are operated on a tardy basis, during one shift and with a low degree of efficiency Whereas last year 29 of the drying units were not being operated during the very peak of the grass meal procurement period (10 June), this year -- 41 units were not operating. I could very well be asked: has the author forgotten about this year's late spring? No, I have not forgotten and yet I have taken note of how grass which was not consumed by large-horned cattle out on the pastures is being used for meal.

Allow me to cite one very convincing example drawn from the practical experience of the Kamara Sovkhoz In June of this year, six batches of grass meal (25 tons each), prepared from fodder obtained from the same field, were inspected. The first batch was classified as being of grade II quality, the second and third batches -- grades IV and V and the last three batches of 75 tons were declared to be of sub-standard quality and practically equal to hay.

A good housewife does not use sawdust for making pies. Nor does a true master of kolkhoz-sovkhoz production prepare grass meal from spruce twigs. Why then do the feed procurement specialists ignore these facts? At eight of the kolkhozes and sovkhozes inspected, the wages of the machine operators were not based upon the quality of the products being produced. This applies to the sovkhozes Mooste and imeni V. Sassi and the Kuldre Kolkhoz in Vyruskiy Rayon. There are others that could also be mentioned.

In order to obtain high grade feed from grass using the method of artificial drying, importance is also attached to exercising systematic control over the quality of the fodder being supplied, the finished products and over the operating regime for the drying units. An inspection has shown that the established system is being followed at only three farms. Veterinary-bacteriological laboratories or laboratories of the agrochemical service (we suffer from a shortage of them) provide analyses roughly within a week's time. Thus the farms are informed regarding the quality of the products produced within 10-15 days following their production. In many instances, the absence of proper control leads to a disruption in the thermal regime for drying and, as a result, to a deterioration in the quality of the output. Thus, this year at the Sovkhoz imeni V.I. Lenin in Tartuskiy Rayon, for these very reasons, a batch of 40 tons of grass meal was classified as being excessively dried out while 11 tons had a moisture content that was higher than the permissible level. As a result, both batches were classified as being of sub-standard quality.

It would seem that I have cited sufficient examples, obtained during the course of the inspection, to allow the leaders and specialists of our farms and the leaders of agroindustrial associations to draw the proper conclusions for themselves. The green conveyer line for 1982 has not yet been halted. The procurement of grass meal must be continued and in the process one fact must be remembered: an economy must be a savings! In my opinion, a savings realized in the procurement of feed must be both prudent and sensible.

The question might very well be asked as to whether or not the above-mentioned shortcomings were known or noted beforehand. They were known. The republic's Ministry of Agriculture was quite familiar with them. As early as August of last year, the republic's KNK mentioned the shortcomings in connection with the preparation of the grass meal. In April of this year the minister, Comrade Lind, issued an order entitled "On Improving the Quality of Dehydrated Green Feed." However, the ministry did not monitor fulfillment of this order.

Last Friday the results of the inspection were discussed during a meeting of the People's Control Committee for the ESSR. The individuals invited to attend this meeting -- responsible comrades from Minsel'khoz /Ministry of Agriculture/ and also the leaders of some farms which had tolerated some serious blunders in the procurements and preparation of grass meal -- were unable to offer any well-reasoned justifications. The ministry did not even consider it necessary to discuss this very vital issue at a meeting of the board, but rather everything was transferred over to the rayon staffs for feed procurements.

In conclusion I would like to note that during the course of the three week inspection measures were undertaken aimed at correcting the shortcomings uncovered in the various areas.

7026
CSO: 1824/24

WIDESPREAD INTRODUCTION OF TOWER METHOD OF HAYLAGE STORAGE URGED

Moscow SEL'SKAYA ZHIZN' in Russian 30 Sep 82 p 2

/Article by L. Pogorelyy, director of the All-Union Scientific Research Institute for the Testing of Machinery and Equipment for Animal Husbandry and Feed Production, Kiev Oblast: "Once Again About Towers"/

/Text/ The feed storage problem is acute and urgent. This is not accidental. According to the data of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin. a considerable amount of feed is lost during storage. Haylage from grass occupies about 20 percent in the balance of coarse and succulent feed fed to large-horned cattle. In our country the bulk of the haylage is stored in ground trenches faced with concrete plates and quite a negligible part, in towers. For example, in the Ukraine only about 1½ percent of the haylage procured in the republic is stored in BS-9.15 towers.

Meanwhile, according to numerous data of scientific research institutes and machine testing stations, feed losses during haylaging in trenches comprise from 20 to 30 percent in our country, whereas haylaging in concrete towers makes it possible to reduce losses by one-half with a simultaneous increase in the nutritiousness of feed.

These advantages of the tower method of haylage storage are attained as a result of self-packing and better conditions of hermetic sealing. However, it is not feasible to ensure the same packing of the haylaged mass with the trench method of storage. In trenches, when the haylaged mass of a standard moisture (45 to 55 percent) is rammed, feed swells after a tractor passage and is rammed very poorly. In order to avoid this, many farms store a mass with a high moisture, owing to which low-quality feed is obtained.

Economic calculations show that with slightly higher expenditures of labor and funds on the preparation of 1 ton of haylage the tower method, as a result of a considerable reduction of feed losses during storage, gives an economic effect ranging from 3,000 to 7,000 rubles per tower and greatly improves the quality of haylage. The conclusion that a widespread introduction of the tower method of haylaging will make it possible to greatly increase haylage production in our country and to improve its quality follows from this quite logically.

However, with all the obvious efficiency of such a method of haylage storage a significant part of the tower storage facilities built in rural areas are not utilized and some combines of haylage towers, for example, such as the Korosten Combine, are transferred to the output of other products not characteristic of them. What is the reason for the situation that has been created? At present tower storage facilities are widely used abroad. For example, more than 1 million such storage facilities operate in Canada and the United States.

In our country, however, these unconditionally efficient storage facilities were undeservedly compromised at the very beginning of their popularization. Many farms that built towers had an irresponsible attitude toward their operation. Truism--nothing comes easily without labor, without a store of knowledge and skills--was forgotten completely.

Although, in principle, the requirements on the technology of haylage procurement in general and of the storage of haylage in BS-9.15 towers in particular are not complicated, the attainment of final results presupposes their strict fulfillment. Essentially, haylage storage is an industrial process. It is important to attain a flow nature of feed procurement and to know how to operate towers. And in order to know this, it is first necessary to learn this. But many do not have this wish. Moreover, kolkhozes and sovkhozes have often permitted a very free interpretation of basic technological principles. There were enough good-for-nothing experimenters, who began to load in towers, instead of a sun-dried mass, anything at all--from a freshly mowed green mass of lupin to straw, without consideration for the quality of grinding and other requirements. One did not have to wait long for negative results.

However, there are farms that approached this matter very seriously and were able to properly master the new haylaging technology. Their towers are in good working order and everyone is satisfied with the storage of feed in them.

The Komsomolets Sovkhoz, which, incidentally, is very far from various scientific centers and departments, that is, on Sakhalin, can be mentioned as a striking example. Haylage towers have operated there since 1977. The farm has 24 such towers. By means of them feed production was able to make the sector profitable. The nutritiousness of feed rose and feed losses during storage were reduced sharply. As a result, the production of livestock products increased.

Of great interest is the experience in haylaging in the BS-9.15 towers of the Mir Fattening Complex in Brest Oblast, where all 26 towers are properly loaded and unloaded every year. Work connected with the operation of haylage towers is well organized in Belotserkovskiy and Stavishchenskiy Rayons in Kiev Oblast. On the experimental farm of the All-Union Scientific Research Institute for the Testing of Machinery and Equipment for Animal Husbandry and Feed Production BS-0.15 towers were put into operation in 1974. In 1978 the farm completely gave up the storage of haylage in trenches in view of the obvious advantage of the tower method. The production of high-quality haylage in towers was one of the basic levers making it possible to ensure an increase in the productivity of cows.

The kolkhozes and sovkhozes that have an irresponsible attitude toward haylaging technology cannot cope with trenches either. Therefore, the mastering of towers proved to be quite a difficult task for them. Some tried to operate towers and after the first failure stopped. Most did not begin this at all. Information on failures spread rapidly. No one began to trouble himself with an analysis of their causes and, as a result, a distinctive psychological barrier appeared on the path of a widespread introduction of haylage towers. Overcoming this barrier often becomes a difficult task.

It should be stated that violations of technological requirements during the storage of haylage in towers are manifested immediately. If a freshly mowed green mass is loaded in a tower, the tower "leaks and cries with grass juices." If an overdried mass is stored, self-combustion can occur. Storage goes on for several weeks in driblets.

Unfortunately, the experience of the farms that have mastered the operation of towers has not become available to all and has not received the proper support and popularization.

Of course, BS-9.15 haylage towers and the mechanisms for them are not devoid of shortcomings, which the USSR Ministry of Machine Building for Animal Husbandry and Feed production and other departments can and should have eliminated promptly. The mastering of the production of domestic KSK-100 self-propelled fodder harvesting combines, without which, with the insufficient number of imported E-280 machines, a successful operation of these towers was not feasible, began comparatively late.

It is time for republic, oblast and rayon agricultural bodies to gain an understanding of the tower problem. A tower, for example, of a capacity of only 900 tons, which is normal for the storage of haylage with our farm sizes, cannot yet be considered "enormous."

Incidentally, with the trench method of haylage storage it is also necessary to see to it that a storage facility is filled very quickly in 4 or 5 days. Modern trenches for haylage and silage, like towers, are built near farms. Their unit capacity is not smaller than that of one tower and often is much higher.

It is also necessary to grind the haylaged mass with the trench method of storage and to do this well, because it is more difficult to pack insufficiently ground haylage and more complicated to unload and distribute it with mechanisms.

Moreover, the need for a train of machines (fodder harvesting combines and transport facilities) with the trench method of haylage storage is by no means lesser than with the tower system.

In conclusion I would like to say that the time of primitive means and methods of harvest storage is long past. Whereas grain preservation problems can be considered basically solved in rural areas, work on the organization of feed storage has only begun. Of course, the scientific and technical revolution in this matter, as in any other, requires material expenditures and much higher skills of executors, who would be capable of strictly observing technological discipline. However, concern for feed, like for grain, should become our common and primary task.

11,439
CSO: 1824/22

LIVESTOCK FEED PROCUREMENT

USE OF CORN FOR SILAGE IN MOLDAVIA DISCUSSED

Kishinev SOVETSKAYA MOLDAVIYA in Russian 1 Sep 82 pp 1, 3

/Article by Ye. Antonishin, chairman of the Association for the Production and Processing of Feed of the Kolkhozzhivprom Production Association of the MSSR Kolkhoz Council: "Basis for Rations"/

/Text/ Silage occupies almost one-fourth in the annual structure of feed expenditures on the output of large-horned cattle. This determines the importance of its procurement.

In the republic this year it is possible to stock up a sufficient amount of this feed--almost 10 tons per cow. The success of this work depends on specialists. Everyone knows that corn for silage must be harvested at the phase of waxy ripeness of ears, but, in practice, it is harvested even at the milky phase, when only one-half of the dry mass harvest is formed. At the phase of waxy ripeness of grain, which lasts 10 to 12 days, corn will yield twice as much dry mass. Furthermore, the proportion of ears will reach 45 to 50 percent of the entire harvest. At this stage of ripeness the plant contains more than 60 percent of physiological water, which is fully sufficient for silaging.

Moreover, the nutritiousness of 1 kg of silage prepared from corn of waxy ripeness reaches 0.30 to 0.34 fodder units instead of 0.20 to 0.24 fodder units in milky-waxy ripeness. This advantage is sufficient to change over to the procurement of silage from corn of waxy ripeness. However, there are also other advantages.

In corn of milky-waxy ripeness there is too much moisture, which is discharged together with the juice. Sugar, which is necessary for the formation of lactic acid, that is, the basic preservative of silage, is also discharged with the juice.

As the concentration of the dry substance increases, the content of sugar in plants gradually loses its significance. This is due to the fact that with a moisture of 60 to 65 percent the vital activity of saprophytic and butyric acid bacteria is severely restrained and fewer alkaline products are formed. Therefore, all the efforts of specialists should be directed toward an increase in the content of the dry substance in corn, which is the source of feed energy.

The digestibility of the nutrient substances of plants, as the latter age, is lowered owing to the "lignification" of stems. However, corn is a special plant in this respect. An ear in milky-waxy ripeness accounts for 27 percent of the total nutritiousness and in waxy ripeness, 51 percent. This means that during a change of the two phases of ripeness there is a mass transfer of sugars from the stem to the starch of ears. In grain the accumulation of nutrient substances continues up to full ripeness and in stems and leaves their number is lowered. Therefore, corn harvested for silage at the phase of waxy ripeness in the total mass competes in the output of fodder units with corn harvested for grain.

It is necessary to dwell on another important advantage of silage from corn of waxy ripeness. A cow consumes 3 to 3.5 kg of dry substances per 100 kg of weight. If it is fed silage of less ripe corn, it will consume no more than 1½ kg of dry substances and from corn of waxy ripeness, up to 2.4 kg. In the latter case the ration energy increases by 17 to 20 percent at the expense of corn grain. The consumption of concentrated feed in the rations of animals can be lowered by such an amount without their productivity being lowered.

Therefore, a ration with a high content of silage from ripe corn is more physiological. Its nutrient substances are more evenly absorbed in the blood and purposefully serve as a source of formation of output. As experience showed, when cows were transferred to feeding on silage from corn of waxy ripeness, their productivity increased by 400 kg in 1 year.

It must also be taken into consideration that, when cows are fed a large amount of silage prepared from corn of milky-waxy ripeness, the reproductive power of animals is also lowered.

The All-Union State Standard envisages the harvesting of corn for silage with its inclusion in the first category when the mass moisture is no more than 68 percent and in the second, when the mass moisture is 70 percent. When the mass moisture is 75 percent, silage is included in the third category and, when it is higher, silage is considered substandard. It should also be taken into consideration that, as a result of the disintegration of organic substances, the content of moisture in ready silage rises 1 or 2 percent as compared with the initial mass.

A laboratory analysis of feed indicates that the moisture of corn for silage on the republic's farms at the end of the third 10-day period in August was from 66 to 78 percent and the development phase was basically milky-waxy. On farms in Suvorovskiy, Slobodzeyskiy, Chimishliyskiy, Novoanenskiy and Tarakliyskiy Rayons and on individual plantations in Drokiyevskiy, Kaushanskiy, Sorokskiy and Chadyr-Lungskiy Rayons there was waxy ripeness.

Every case of utilization of corn for silage at early phases of development should be considered mismanagement and strict proceedings with compensation for the financial damage done to a farm should be instituted against guilty persons.

Work on the production of high-quality silage is also done in the process of its storage. Violations of silaging technology lead to a loss of feed, mainly owing to a sharp reduction in its digestibility.

The experience of past years indicates that at the height of the silage procurement period a significant part of the mass arrives directly at sections and complexes. This leads to a sharp drop in the productivity of animals, because the ration is imbalanced in nutrient substances. As a result, feed is overspent and the possibility of silage procurement is reduced.

On every farm it is necessary to wage a decisive fight so that not a single hectare of corn intended for silage is harvested earlier than the phase of waxy ripeness of grain.

11,439
CSO: 1824/21

LIVESTOCK FEED PROCUREMENT

SOLVING LIVESTOCK FEED PROBLEMS IN ARMENIA

Yerevan KOMMUNIST in Russian 20 Aug 82 p 2

/Article by V. Araksyan, chief specialist for the ArSSR Ministry of Agriculture: "Feed Rear Services of the Complex"/

/Text/ Some History

As is known, during the 1970-1981 period a number of livestock production complexes and mechanized farms for the production of milk and the fattening of large-horned cattle and hogs were built in our republic. In order to ensure that these complexes and farms were supplied with adequate quantities of feed, a tremendous amount of work had to be carried out in connection with the creation of cultivated pastures and highly productive feed lands.

The chief condition: creation of the feed base was not to lag behind the construction of the livestock complexes and mechanized farms. Moreover, it had to precede the placing in operation of complexes by a minimum of 3 years and highly productive feed lands had to be available for the complexes prior to the completion of their construction. The carrying out of this task was entrusted for the most part to the republic's Armvodstroy enterprises.

How is this task being solved on the farms?

The operational experience of the initial large-scale livestock complexes for milk production and the fattening of cattle reveals that the problem of creating a strong feed base is still being carried out in a tardy manner in many instances. Moreover, quite often the complexes are built as the saying goes in empty areas, with their feed base existing only on the plan. Although the Ovtashat and Ararat Sovkhozes in Masisskiy Rayon displayed concern in advance for improving the feed lands for their complexes, other rayons failed to show such timely concern.

In Talinskiy Rayon the hog raising complexes were located in an area where there were no feed lands. Nor were the best conditions available for some mechanized farms and complexes in Spitakskiy, Vardenisskiy and Shaumyanskiy Rayons. Thus it comes as no surprise to learn that a majority of the complexes, in terms of the indicators for labor productivity and profitability of output, are at a lower level than even the rank and file farms.

The construction of complexes and mechanized farms is a task of tremendous state importance. And this task must be solved without allowing a pause to take place between the placing in operation of the farms and the creation of the feed lands. This requires the maintenance of close contacts for the work being carried out by the planning, economic and construction organizations.

Quality and Quantity

The consistent conversion of livestock production over to an industrial basis and its transformation into a modern and highly efficient branch is possible only upon the condition that the livestock are supplied with adequate quantities of rich feed. Meanwhile the primitive methods being employed for harvesting and processing the feed on many farms throughout the republic and the shortage of storehouses are producing a situation wherein roughly 20-30 percent of the nutrients in the hay, haylage and silage is being lost. In many areas, only 30-35 percent of the hay being procured can be classified as being of 1st class quality and the amount of haylage being obtained that meets the established requirements is even less.

An acute protein deficit is being observed in the rations and this is resulting in tremendous over-expenditures of feed with no resulting increase in livestock production output. This was mentioned with some degree of alarm during the June Plenum of the Central Committee of the Communist Party of Armenia, where it was stated that over the past 6 years the enterprises of Armglavzhivprom undersupplied the state to the tune of 3,155 tons of meat. Moreover, the over-expenditure of feed during these years amounted to 60,000 tons of feed units.

In order to overcome this deficit to a certain extent, the republic's kolkhozes and sovkhozes are expanding their sowings of pulse crops and alfalfa. However, these measures alone will not correct the situation.

Unfortunately, the amount of rich mixed feed being produced in the republic is clearly inadequate. It has been estimated that in poultry production alone, owing to poor quality feed, growth in the young stock has slowed down by 50 percent. The expenditures of low quality feed per quintal of milk exceed the norm by a factor of 1.5.

The chemical service is required to organize regular rounds of the farms for the purpose of collecting feed samples, analyzing them and acquainting the specialists with the results obtained as rapidly as possible. We are of the opinion that the deliveries of equipment and instruments required for equipping the rural laboratories must be accelerated.

The Gordian Knot

All of the machines and mechanisms at the complexes and mechanized farms which make it possible to introduce an industrial technology and reduce the number of workers must constitute a single technological line. This applies first of all to the feed preparation shops, where the crushing and mixing of coarse, succulent and concentrated feeds and mineral additives are carried out. Are such machines and mechanisms available for the feed preparation shops of complexes for, let us say, 800 cows? No. The equipment that is presently being installed is not in keeping with the modern requirements.

The quality of the machines and equipment leaves a great deal to be desired and quite often they are used for only one half of their normal service life. For example, the service life for feed distributors is slightly more than 2 years. But still one is not surprised to see newly delivered equipment being used not so much for replacing manual labor but rather for replacing equipment which has worn out prematurely.

A great amount of work has been carried out in the republic in connection with industrialization of the farms. However, attention is once again being drawn to the incomplete solving of a number of problems. Only one third of the livestock facilities have been completely mechanized. For various reasons the feed preparation shops and feed distributors have been inactive on many farms in Tumanyanskiy, Noyemberyanskiy, Talinskiy, Gugarkskiy and a number of other rayons. At the present time, it is being maintained in the various areas that this equipment is not suitable and that it does not conform to the accepted technology. But indeed the new technology was introduced some time ago and sufficient time has elapsed in which to eliminate unnecessary mechanisms. Today these miscalculations pose a special burden to the economy in the form of considerable amortization deductions.

Finally, there is a third problem for which a solution is required if livestock production is to be converted over to an industrial basis. Here we have in mind the need for improving organization and wages for the workers in this branch. The facts indicate that many leaders and specialists of complexes and farms in Gorisskiy, Azizbekovskiy, Araratskiy and a number of other rayons are only weakly addressing the economic problems. Not in all areas are the wages being tied to the level and growth in labor productivity.

During the May (1982) Plenum of the CPSU Central Committee, Comrade L.I. Brezhnev stated that the plans for this five-year plan call for the extensive introduction into operations, in branches of the agroindustrial complex, of group contracts and the job contract plus bonus wage system. Such experience has been accumulated in farming: it is now becoming firmly established in livestock production. In Saratov Oblast, for example, there are more than 140 contractual teams of field crop workers and livestock breeders in operation -- engaged in producing feed and fattening livestock. Many farms in Stavropol Kray are making very effective use of the Ipatovo method of equipment utilization for procuring feed, with all of the work being carried out according to the brigade contract method.

Interesting experience has been accumulated in Kharkov, Minsk and a number of other oblasts in the procurement of feed by interfarm detachments which operate on the basis of a single work order, with payments being made based upon the quantity and quality of the output.

Here it should be mentioned that we are introducing progressive forms for procuring feed only slowly and by no means in all areas. A formal approach is being employed in the creation of independent feed production subunits on a number of farms in Aniyskiy Rayon and the imeni Kamo Rayon. On many farms the organization of the labor of the workers is based upon the principle of payments according to the final results. Only a small number of the republic's teams work according to the non-schedule system. This is lowering appreciably the effectiveness of equipment usage for haying operations and it is also affecting the feed procurement rates.

During the current and subsequent five-year plans, it is expected that increases will take place in capital investments for the modernization and erection of livestock complexes and mechanized farms and in feed production.

As is known, by 1990 the republic's milk yield per cow must reach 2,400 kilograms, or 481 kilograms more than the average for the 10th Five-Year Plan. Compared to 1980, the average weight of large-horned cattle sold to the state will increase by 55 kilograms and amount to 350 kilograms. By 1990, the plans call for meat production to be increased by 28 percent above the figure for 1980, milk by 31 percent and eggs -- by 53.8 percent.

In order to achieve these goals, efficient control must be exercised over the work of the livestock production complexes. Finally, the "Gordian knot" of discrepancies which are making it difficult to obtain the planned return from these installations must be cut.

Here we have in mind mainly the feed base and the fact that each complex must have a reliable feed rear service and each kilogram of feed must be utilized so as to produce a considerable increase in livestock weight and in the milk yields.

7026
CSO: 1824/26

PROTECTING LIVESTOCK AGAINST DANGEROUS DISEASES

Moscow SEL'SKAYA ZHIZN' in Russian 7 Sep 82 p 2

/Article by P. Kartashov, doctor of veterinary sciences and Ya. Gunyavin: "A Redeeming Cloud"/

/Text/ In a large building of a hog raising complex, where thousands of animals are maintained under one roof, the doors and windows are closed and the air conditioning turned off. Today is a special day -- a preventive innoculation is being given against a dangerous disease. But why is it so routinely calm? One does not hear the usual noise or squealing of the animals, as is usually the case when an injection is given to each young pig.

The fact of the matter is that the work is being carried out here in the absence of injections. In this tightly closed facility, the thousands of animals are inhaling a health-giving air in which a vaccine is being dispersed in the required dosages by means of special generators.

Life itself has introduced this new method for carrying out innoculations: we are converting livestock production over to an industrial basis -- we are also changing the traditional methods for treating the animals with curative-preventive preparations. Yes and how many service personnel and how much time was required under the old system for vaccinating millions of head of poultry concentrated at a modern poultry factory or hundreds of thousands of hogs at one industrial complex? And for the entire country?

This is why scientists at the all-union scientific research institutes of veterinary sanitation, veterinary virology and microbiology and also at the All-Union State Scientific-Control Institute of Veterinary Preparations applied themselves in real earnest to this problem. Taking into account the requirements of the times, they energetically undertook to develop a method and the means and technology for applying chemical and biological preparations in an aerosol state. The scientists consider this trend to be most promising for raising the effectiveness and intensification of curative-preventive and veterinary-sanitation operations under modern conditions.

Over the past 20 years the scientists and specialists at the mentioned institutes have conducted extensive studies and accomplished a great deal towards introducing the aerosol technology into livestock production practice. Among their more important works are studies on the movement of aero-dispersed systems in the closed space of livestock facilities and the effect mechanism of aerosol disinfectants on pathogenic microorganisms. The role played by the electrical charge of aerosol particles in the respiratory tract of an animal was clarified and a study was also undertaken of the effects of a whole series of physical-chemical factors on the preservation ability of the vaccine strains of bacteria and viruses in an aerosol.

The results of such studies have served as the foundation for arriving at practical methods for employing aerosols of chemical and biological preparations in livestock production, for preventing and combating infectious and invasion diseases in agricultural animals.

The specialists have created an entire "family" of aerosol generators which meet the requirements of veterinary practice and they have organized their series production.

Thus extensive use is being made of the aerosol method for disinfecting livestock facilities, transport facilities, packaging materials and other objects. Actually, the former method of disinfection through the spraying of surfaces had substantial shortcomings. Large quantities of disinfectant were used and the method was laborious and harmful to those who carried out the treatments. These shortcomings were eliminated with the introduction of aerosols. Labor productivity was raised by a factor of 4-6 and the expenditures of disinfectants decreased by a factor of 3-4. Such a high level of effectiveness is explained by the fact that the specific surface of a substance is increased when it is employed in an aerosol form. And an increase in surface energy naturally brings about an increase in the biological and chemical activity of the substance.

A method has been developed and chemical agents and regimes and a technology for the prophylactic and forced aerosol disinfection of livestock facilities for providing treatment against tuberculosis, brucellosis, Siberian plague, hoof-and-mouth disease, pasteurellosis, erysipelas, listeriosis, laringo-tracheitis, mycoplasmosis and some other animal diseases.

This method entered into use in 1962 and it is presently being used at all of the country's poultry factories, at hog raising complexes, at specialized farms for the raising of large-horned cattle, at fur-farming and bee-keeping farms and also for the disinfection of motor vehicles, freight cars, aircraft and ships. Methods have been developed and the means found for disinfecting facilities while animals and poultry are present and this is of extreme value. Indeed, in view of the large numbers of animals the task of moving them to other areas temporarily so that disinfection can be carried out is practically insurmountable.

The aerosol vaccination of animals, poultry and fur-bearing animals is of extreme interest and highly effective. This method alone can ensure the rapid and reliable treatment of millions of animals, especially when the work must be carried out on an urgent basis.

Scientifically sound aerosol vaccination methods are being employed for poultry for combating the Newcastle disease and for fur-bearing animals against the plague that strikes carnivores. Methods have been developed and recommended for use in determining the concentration for an aerosol vaccine in a facility, for controlling the dosages for the animals and so forth. In the case of aerosol vaccinations for poultry, labor productivity is increased by several times depending upon the age, the maintenance method and the animal concentration and the expenditure of vaccine is reduced by a factor of 1.5-3.

The method of aerosol vaccination of poultry and fur-bearing animals was introduced into veterinary practice throughout the country in 1974. During this period, more than 1 billion head of poultry and more than 200,000 fur-bearing animals have been treated successfully. The use of the new method for vaccinating poultry against the Newcastle disease and fur-bearing animals against the plague, alone produces a savings of more than 30 million rubles annually.

A technology has been introduced for the aerosol vaccination of hogs against classical plague, erysipelas and Aueski disease, with more than 1.5 million animals already having been treated. Industry has mastered the production of the highly effective SAG-1 and SAG-1RN aerosol generators. There is a strong demand for these units both in our country and abroad. Aerosol cylinders have been introduced into production operations and this has made it possible to reduce sharply the expenditures of the preparations and to raise the productivity and culture of the labor involved in treating the animals.

The overall annual economic savings realized from the introduction into livestock production operations of aerosol forms of chemical and biological preparations exceeds 50 million rubles. This serves to indicate that this particular work is fully deserving of a high state evaluation.

The scientists are not relaxing content with that which has already been accomplished. More productive equipment is presently being developed for obtaining aerosols and for recovering them following the completion of work. Mobile complexes are being created for the aerosol treatment of animals and facilities and this will make it possible to increase efficiency and raise labor productivity.

7026
CSO: 1824/25

LIVESTOCK

COMMENTARY ON ESTONIAN LIVESTOCK PRODUCTION DEFICIENCIES

Tallinn SOVETSKAYA ESTONIYA in Russian 15 Sep 82 p 3

/Article: "Only Through the Use of All Resources"/

/Text/ By August the main front of the work in the rural areas had certainly shifted to the fields. Thus special importance was being attached to achieving definite successes in livestock production.

During the month, an average of 335 kilograms of milk was obtained per cow, or 4 kilograms more than the indicator for August of last year, but nevertheless 1 kilogram less than the figure for August 1980.

The milk yields had increased in all rayons with the exception of Kingiseppskiy, Paydeskiy and Vil'yandiskiy. In Kokhtla-Yarveskiy Rayon the monthly increase amounted to 15 kilograms and in Yygevaskiy and Tartuskiy Rayons -- 12 kilograms.

Nevertheless, the lag which has developed since the beginning of the year continues to remain serious. By 1 September, the average milk yield per cow since the beginning of the year was 2,331 kilograms -- 211 kilograms less than the figure for 8 months of last year. And in Paydeskiy, Raplaskiy and Vil'yandiskiy Rayons the decline exceeded 300 kilograms

The milk yield per cow is a barometer which testifies to the level of organizational work being carried out on a farm. Proper concern for the dairy herd was not displayed in all areas during the month of August. This explains why the majority of the rayons did not achieve their planned milk production goals. It is obvious that the decline in cow productivity at a number of kolkhozes and sovkhozes was caused by objective factors and one remains quite clear -- by no means is full use being made of all of the reserves and opportunities available for improving the situation. There have been incidents of basic mistakes being made in the organization of production operations and in exercising control over the farms and labor discipline leaves a great deal to be desired. Thus a requirement exists for raising the exactingness of the farm leaders and specialists with regard to labor organization and for the party organizations and all communists to promote in a more active manner improvements in the organization of milk production.

During the 8 month period, 11 percent less milk was sold to the state than 1 year ago. The annual plan for milk sales to the state was fulfilled by only 59 percent.

And although in August the sale of milk had practically reached last year's level, nevertheless everything must be done to fulfill the annual task as best as possible.

Meat Procurements and Average Daily Weight Increases in Cattle During Fattening
(for January to August 1982)

Rayons	Cattle and Poultry Procured at All Categories of Farms, in %		Average Daily Weight Increase In Cattle During Fattening at Kolkhozes and Sovkhozes, in grams	
	Of annual plan	Of corresponding period for 1981	Large-horned cattle	Hogs
1. Khar'yuskiy	56	86	491	392
2. Khiyumaaskiy	55	98	483	473
3. Pylvaskiy	49	89	564	422
4. Pyarnuskiy	49	80	399	478
5. Kingiseppskiy	48	83	554	353
6. Rakvereskiy	48	80	455	401
7. Yygevaskiy	46	85	463	391
8. Vil'yandiskiy	46	85	530	477
9. Kokhtla-Yarveskiy	45	78	551	373
10. Tartuskiy	45	81	503	375
11. Vyruskiy	44	84	562	393
12. Khaapsaluskiy	41	73	467	361
13. Valgaskiy	41	76	478	339
14. Paydeskiy	40	78	390	381
15. Raplaskiy	38	78	506	392

We are on the threshold of the transitional autumn period. Last year this period was accompanied by a sharp decline in milk yields -- by 40-50 kilograms. Certainly, a certain reduction in productivity during this period can be considered normal owing to a sharp change in the feeding and maintenance conditions, but last year's drop was extremely severe. Special emphasis should be placed upon the fact that we are losing many tons of milk annually owing to poor organization of the transitional period.

This year there is an abundant amount of aftergrowth and sufficient straw and on many farms -- sufficient hay. In the event of difficulties being encountered in the supply of green feed, other types of feed must be readily at hand. In any case, the herd must be provided with feed at the established times and in sufficient quantities. Even with an abundance of succulent feed, every attempt must be made to satisfy the livestock requirements for mineral feeds. The feeding of the herd during the transitional period requires good organization and strict controls.

The moment is at hand for preparing the livestock facilities for winter. The cold weather must not take the farms by surprise.

Milk Procurements and Cow Productivity
(for January to August 1982)

Rayons	Milk procured at all categories of farms, in % of		Average milk yield per cow at kolkhozes and sovkhozes, in kg.	± kilograms for same period in 1981
	Annual plan	Same period for 1981		
1. Pyarnuskiy	65	94	2479	-90
2. Pylvaskiy	65	99.5	2478	-31
3. Kingiseppskiy	64	90	2156	-147
4. Khaapsaluskiy	60	88	2149	-169
5. Rakvereskiy	60	90	2537	-199
6. Vyruskiy	60	92	2329	-163
7. Valgaskiy	60	91	2072	-168
8. Khiyumaaskiy	60	85	2240	-300
9. Yygevaskiy	59	90	2392	-170
10. Kokhtla-Yarveskiy	59	86	2255	-230
11. Vil'yandiskiy	58	88	2346	-317
12. Tartuskiy	58	89	2252	-179
13. Paydeskiy	57	85	2468	-335
14. Khar'yuskiy	56	84	2209	-265
15. Raplaskiy	53	80	2209	-359

Nor can we be satisfied with the present status of affairs with regard to the sale of meat to the state. Cattle and poultry sales are 18 percent less than 1 year ago, with August sales being 8 percent less than the figure for last August. Over the 8 month period the kolkhozes and sovkhozes fulfilled their annual task for cattle and poultry procurements by only 48 percent. Procurements declined in all rayons with the greatest reductions taking place in Khaapsaluskiy, Valgaskiy, Kokhtla-Yarveskiy, Paydeskiy and Raplaskiy Rayons. And although in recent months some success had been realized on the whole in organizing the production of meat, nevertheless the situation has still not stabilized in all areas owing to a feed shortage at the beginning of the year. As yet the proper level has not been achieved in the daily weight increases in animals undergoing fattening and their sales weight is still low.

During the 8 month period, the daily weight increase for large-horned cattle undergoing fattening amounted to only 496 grams (in August 625 grams were obtained) compared to 596 grams last year. The weight increase for hogs in a fattening regime was only 404 grams (compared to 424 grams last year). The average sales weight for large horned cattle during the 8 month period was only 403 kilograms (438 kilograms last year) and the average sales weight for hogs at the present time is 91 kilograms (102 kilograms 1 year ago). In some rayons the picture is even worse. For example, the average sales weight for large-horned cattle obtained from farms in Raplaskiy Rayon was 372 kilograms (421 kilograms 1 year ago) and the average sales weight for hogs -- 78 kilograms, compared to 101 kilograms in 1981. The same indicators are low in Khaapsaluskiy, Kingiseppskiy and Vyruskiy Rayons.

Only the correct organization of fattening operations will serve to improve the situation during the coming months. Special attention must be given to the fattening of large-horned cattle. Towards this end, each farm has a sufficient quantity of feed available obtained from grasses. At the present time, the haulm of vegetables and root crops is available in all areas. The feed ration can also be supplemented by the addition of potato tubers picked up from plantations which were already harvested. Maximum use must be made at the present time of these and all other farm reserves.

The production and sale of eggs are proceeding rather successfully this year. During the 8 month period, 163 eggs, or 1 more than last year, have been obtained from each laying hen. Two percent more eggs have been sold to the state than were sold during the same period last year. At the present time, the annual task has been fulfilled by 68 percent.

Great shortcomings are being observed in the work of reproducing the herd. Since the beginning of the year and through 1 September, 3,743 (2 percent) fewer calves were obtained than was the case by this same date last year. In particular, Paydeskiy, Khar'yuskiy and Kokhtla-Yarveskiy Rayons have fallen behind in this regard. Fewer cows and heifers have been mated in these rayons.

During the winter, the number of hogs declined on many farms owing to a shortage of feed. The pork production plans for the coming year are very tense and the present number of hogs falls short of being able to carry them out. There must be sufficient feed for the hogs during the winter. It is obvious that additional sows will have to be mated in order to raise the size of the herd to the optimum amount commencing with the first months of next year.

The crops which are still out on the fields must not be forgotten even for 1 day.

The rates for fulfilling the state obligations for the sale of grain, potato and vegetable crops must be accelerated. Minsel'khoz /Ministry of Agriculture/, Minplodoovoshchkhoz /Ministry of the Fruit and Vegetable Economy/, the procurement organizations and the kolkhozes and goskhozes must undertake efficient measures aimed at carrying out the state tasks for the sale of the branch's field crop husbandry products.

The party organizations of kolkhozes and sovkhozes, all agricultural workers and their city-dwelling assistants must at the present time direct all efforts towards the rapid completion of the crop harvesting operations.

7026
CSO: 1824/18

EFFECTIVE MEASURES FOR ACCELERATING AGRICULTURAL PRODUCTION

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 9, Sep 82 pp 76-81

/Article by N. Smetanin, deputy chief of a department at USSR Gosplan: "The Food Program: Rates, Proportions"/

/Text/ More than 15 years have elapsed since the decisions were handed down during the March (1965) Plenum of the CPSU Central Committee, decisions which laid the foundation for the party's agrarian policies during this modern stage. During these years, qualitative improvements have been realized in developing the productive forces of the branch, its logistical base has been strengthened substantially, the general-educational and professional-technical level of the workers has been raised and changes have taken place in the social climate in the rural areas. The operational results of the kolkhozes and sovkhozes have been influenced immeasurably by those branches responsible for supplying industrially produced means of production and also for procuring, storing and processing the products. The production relationships have become considerably more complicated. A need has arisen for developing and adopting new solutions for the problems concerned with developing the agrarian sector of the economy, solutions which are more in keeping with the changing conditions. This task was fulfilled during the May (1982) Plenum of the CPSU Central Committee. While continuing the program adopted earlier aimed at further developing the logistical base of agriculture and its associated branches, strengthening the kolkhoz and sovkhoz economies, raising the material interest of their workers and implementing improvements in the forms for organizing and controlling production, the decisions handed down during the Plenum are pushing into the foreground a number of basically new trends in the agrarian policies. These trends must bring about radical improvements in the conditions for reproduction, ensure more efficient functioning of the production potential created and the resources allocated and, on this basis, achieve more stable support for the population in the form of food goods and bring the structure of consumption more in line with the rational norms.

Here we have in mind the need for intensifying the all-round development of the agrarian sector of the economy. The Plenum adopted the country's food program for the period up to 1990, a program which does not have a parallel with regard to the broad scope of the branches and the spheres of activity associated with the production of food goods or the all-round nature of the prospects for development of the interacting branches. With its adoption, a great step was taken towards overcoming the lag which has developed between the organizational forms and methods for planning and control in the agrarian sector on the one hand and the achieved level of development of the productive forces on the other. The use of an all-round approach for planning and controlling agroindustrial production is becoming a basic condition and one which must ensure a considerable improvement in its proportional and balanced development.

The Plenum outlined a system of measures for the social transformation of the rural areas. This came about owing to the continuing and considerable differences in housing and cultural-domestic conditions in the rural areas and cities, differences which at the present time constitute one of the most important causes of the uncontrolled flow of manpower, particularly its more able-bodied portion, from the rural areas into branches of industry. As a result, in large zones of the country (nonchernozem zone of the RSFSR, Siberia and the Far East, regions in the Volga area, a number of regions in the Ukraine and so forth), agriculture has been transformed from a branch which in the recent past had a surplus of labor into a branch that is suffering from a shortage of labor and in which the labor factor has become a chief and decisive factor with regard to the effectiveness of use of the production potential created and the material resources allocated.

The decisions handed down during the Plenum on the redistribution in favor of agriculture of the volumes of non-productive construction and on certain measures for retaining kolkhoz members and sovkhoz workers and raising their material interest in the results of their labor must serve as a lever which will make it possible not only to lower the turnover in skilled manpower in agriculture but also to attract for work in the branch those youth who reach the able-bodied age and, on this basis, raise the effectiveness of additional investments in the productive sphere in the rural areas and the utilization of the production potential.

The resource-saving method of production intensification received final confirmation in the decisions of the May (1982) Plenum of the CPSU Central Committee. The plans for the current decade call for the maintenance of rather high rates of growth for the production of agricultural goods, with a substantial reduction in the rates of growth in capital investments and in deliveries of mineral fertilizers and other material resources. This can be seen in Table 1, where figures are provided on an increase in the more important resources per 1 percent growth in gross agricultural output.

TABLE 1
(in %)

Resources	1971-1975	1976-1980	1980-1985	1986-1990
Capital investments	4.7	3.6	0.8	0.9
Deliveries of mineral fertilizers	4.9	3.4	1.9	1.8
Energy capabilities	3.1	4.0	2.7	1.8

Hence, during the 1980's the center of gravity will shift to the intensification of agricultural production, which will be achieved through the best utilization of the production potential created and the resources allocated.

The more extensive use of non-traditional means for increasing the volumes of food goods consumed, as called for in the food program, particularly by improving the preservation of the products and delivering everything to the consumers that is produced out on the fields and farms, serves as a continuation of this trend directed towards further intensifying the gross yields of all types of agricultural products.

The losses in agricultural products continue to remain high owing to the weak nature of the logistical base for storage and the disorganized character of the interrelationships among the partners in the production, storage and processing of the products. Thus, in the case of fruit, vegetables and feed, these losses exceed to a considerable degree the normative levels. Certainly, losses and waste products are inevitable and yet the need for sharply reducing these losses and waste products is of paramount importance.

The food program calls for specific measures to be carried out aimed at improving the preservation of the products: leading rates for the construction of capacities intended for this purpose; strong improvements with regard to satisfying the requirements for transport, including specialized transport; improvements in packaging operations; improvements in the interrelationships among partners upon whom the successful movement of products from the field to the consumer is dependent; a reduction in losses in the sphere of consumption.

As the logistical base of the processing branches of industry becomes stronger, greater quantities of food products will be produced based upon the complete utilization of all of the components in the food products. During this current decade, waste-free technologies for processing products must be introduced into operations on an extensive scale; the use of food products for technical purposes must be curtailed, with chemical products being employed in their stead; improvements must take place in the use of "secondary" raw materials (skim milk, buttermilk, whey, fruit pomace and so forth) for the preparation of rich food products and the sale of food goods in light packaging increased. At the present time, for example, more than one half of the milk protein and two thirds of the skim milk and buttermilk being produced are being used for food purposes and 85 percent of the whey is being fed to the livestock.

The mentioned trends in agrarian practice are defining new requirements for planning and, in particular, for establishing and changing the national economic, interbranch and intrabranch proportions.

The intensification of the social trend in developing the economy, which is typical of the modern stage, and the party's program aimed at steadily raising the welfare of our Soviet people, during the past five-year period defined the appropriate structural improvements in the national economy in favor of the branches of the agroindustrial complex*.

The decisions handed down during the May Plenum of the CPSU Central Committee call for these improvements to be further intensified during the 1981-1990 period. The proportion of capital investments for use in the APK /agroindustrial complex/

---

* Here and subsequently the national economic agroindustrial complex is viewed from the standpoint of the following branches: agriculture and its production-technical services, land reclamation construction, food, meat and dairy, milling-groats and mixed feed, microbiological industry, machine-building branches (tractor and agricultural, for livestock production, feed production and feed purposes), the production of mineral fertilizers and chemical agents for protecting plants and also the fish industry.

branches, compared to the overall volume for the entire national economy, increased from 25.1 percent during the 1961-1965 period to 32.5 percent during the 10th Five-Year Plan and in the plan for 1981-1985.

Mention should be made of the high and stable proportion of capital investments assigned for agricultural development in the agroindustrial complex, as shown in Table 2.

TABLE 2
(in %)

Branches of the Agroindustrial Complex	1961-1965	1976-1980	1980-1985	1986-1990
Resource-producing*	6.9	8.2	9.2	9.8
Agriculture	79.0	83.6	83.3	82.2
Processing industry	10.7	5.9	5.3	5.8
Fish industry	3.4	2.3	2.2	2.2

* Machine-building (tractor and agricultural, for livestock production and feed production, for food purposes); production of mineral fertilizers, microbiological industry.

Of interest in this regard is the inter-branch structure of capital investments, developed on the basis of capital investment volumes computed by the specialists and required for complete satisfaction, by the end of the 12th Five-Year Plan, of the requirements of each APK branch for the appropriate capabilities. Our computations reveal that this structure differs only slightly from the structure shown in Table 2. In this instance, agriculture accounted for 81.1 percent of the capital investments required for development of the APK on the whole, instead of 82.2 percent as called for in the computations for the food program and 83.6 percent -- during the 10th Five-Year Plan; the proportion for the resource-producing branches -- 10.4 percent instead of 9.8 and 8.2 percent respectively, processing branches -- 6.4 percent instead of 5.8 and 5.9 percent and the fish industry -- 2.1 percent.

Based upon the experience of foreign countries, many economists advocate a considerable increase in the proportion of the resource-producing and processing branches with regard to the overall value of the fixed productive capital and, it follows, the capital investment volumes allocated. A simple confirmation for such a conclusion is not provided either by the indicators in Table 2 for the existing and planned inter-branch structure of capital investments for the agroindustrial complex or by the indicators for the possible structure for complete satisfaction of the capital investment requirements for all branches of the APK.

In our opinion, this situation can be explained for the most part by two circumstances: the objective need for the accelerated development of the logistical base for agriculture and the all-round nature of planning for this branch in our country. Owing to the weak nature of the logistical base for agriculture prior to the March (1965) Plenum of the CPSU Central Committee and despite large capital investments during the 8th to the 10th five-year plans, the mechanization of production processes and increases in the fixed productive capital have still not been carried out in the branch in all areas. We are of the opinion that it was precisely this situation that influenced the formation of the capital investment structure shown in Table 2. In other words, this approach embodies recognition of the presently existing and roughly equal degree of support (lack of support) for the branches of the APK in the form of fixed capital and the degree of satisfaction of their requirements for capital investments.

The second circumstance -- the fact that the capital investments allocated for agriculture are used not only for the development of farming and livestock production but also for the construction and equipping of enterprises and organizations for providing production-technical services for the kolkhozes and sovkhozes and the processing of agricultural products, for developing the base for interkolkhoz construction organizations and the erection of installations of the construction industry within the USSR Minvodkhoz /Ministry of Land Reclamation and Water Resources/ system; housing and cultural-domestic construction and the erection of other installations not used directly for the production of agricultural products. During the 10th Five-Year Plan, of 173 billion rubles worth of capital investments in agriculture, according to computations by specialists, 39 billion rubles worth (23 percent) were used for the creation of fixed productive capital of a non-agricultural nature and 26.2 billion rubles worth (15 percent) -- for the construction of non-production installations.

As a result of the functioning of the fixed productive capital created in the branch by means of capital investments, increases took place in the gross output yields of farming and livestock production and also in the production of various types of industrial products and services. In 1980, for example, the following was obtained: gross agricultural output -- 122 billion rubles worth; gross industrial output created at kolkhozes, sovkhozes and other enterprises of the USSR Ministry of Agriculture -- 18.2 billion rubles; the output of enterprises belonging to the USSR Goskomsel'khoztekhnika system, including the value of work and services -- 9.6 billion; the output of industrial enterprises of the USSR Minvodkhoz -- 0.7 billion rubles.

The development of agroindustrial integration and the organized merging of the production, processing and sale of agricultural products will bring about an increase in agriculture in the scales of industrial, procurement and other types of activity, an intensification of the all-round nature of the branch and an expansion in the sphere of use of the capital investments allocated for it. Thus, during the 10th Five-Year Plan and in connection with the creation of the USSR Minplodoovoshchkhoz /Ministry of the Fruit and Vegetable Industry/, the capital investments in agriculture increased by 1 billion rubles.

Hence, during this modern stage of development, a high proportion of the capital investments allocated to the branch for the agroindustrial complex, of the overall volume of capital investments, is conditioned by objective factors. In our opinion, a noticeable turning point in the capital investment structure in favor of the resource-producing and processing branches of industry will occur during the next stage, at which time all of the production processes in agriculture will be mechanized for the most part, its requirements for other capital will be satisfied and the re-equipping of the logistical base will commence.

The plans call for more substantial structural changes to be carried out within the APK branches during the current decade. Thus the chief material elements for production in livestock operations are: the animals, the feed and the livestock facilities. During the past three five-year plans the number of livestock at all categories of farms increased by 22 percent; large funds were allocated for the construction of livestock facilities and this made it possible, by the end of 1980, to achieve a satisfactory situation with regard to available livestock facilities, including those suitable for this purpose. At the same time, the capital investments in feed production and feed preparation installations lagged substantially behind the requirements. Their volumes were three times less than the amounts allocated for the construction and acquisition of equipment for livestock operations. There was a shortage of mineral fertilizer; sufficient quantities could not be applied in behalf of the forage crops. This represents one of the reasons for the feed base falling behind the livestock requirements and for the weak growth in livestock productivity in the past. The food program calls for the same amount of capital investments to be made available for feed production over a period of 10 years as is being provided for livestock production operations. And whereas the allocation of capital investments for livestock production will decrease somewhat compared to the previous decade, the investment of funds in feed production installations will increase by a factor of 2.2. The increasing deliveries of mineral fertilizers to the rural areas will be used mainly in behalf of the grain and forage crops.

The planned change in the program in the type of expanded reproduction in the livestock production branches is closely associated with reorientation of the trends for the use of capital investments and mineral fertilizers in favor of feed production. Whereas during the 1970's 81 percent of the entire increase in livestock output was achieved by increasing the number of animals and only 19 percent as a result of increased animal productivity, during the current decade a paramount role in increasing the production of livestock products will be played by raising the productivity of the livestock and poultry based upon considerable improvements in the feeding programs (roughly 70 percent of the overall increase in gross output).

In his report delivered before the May (1982) Plenum of the CPSU Central Committee, L.I. Brezhnev stated in this regard: "The desire to have more livestock is understandable. But under modern conditions a chief concern is that of increasing the milk yield per cow and the average weight of animals turned over for slaughtering. Improvements in the quality structure of the animals are considered to be of paramount importance. And, it goes without saying, this includes considerable growth in the production of feed and improvements in the quality and rational utilization of the feed."* The plans call for the feed consumption per standard head to be raised to 33-34 quintals of feed units by 1990, or an increase during the decade of 7 quintals (over the past 10 years, this increase amounted to 1.5 quintals of feed units).

During the 11th and 12th Five-Year Plans the entire increase in output production in farming will be achieved by raising cropping power, with the areas under crops remaining stable. Here the final result will depend to a large degree upon efforts aimed at improving the fertility of the land and reducing losses in the crops grown.

Land reclamation operations have become one of the most effective trends for improving the fertility of soils. During the period following the May (1966) Plenum of the CPSU Central Committee, which outlined a program for carrying out large-scale work in connection with land irrigation and drainage, the capital investments for these purposes (including the agricultural development of lands placed in operation) increased from 6.7 billion rubles in 1961-1965 to 34.5 billion during the 10th and 40 billion rubles in accordance with the plan for the 11th Five-Year Plan.

---

* "Prodovol'stvennaya programma SSSR na period do 1990 goda i mery po yeye realizatsii" /USSR Food Program for the Period Up To 1990 and Measures for Implementing It/. Moscow Politizdat, 1982, p 12.

The need for considerable expenditures for land reclamation derives from the fact that the results of agricultural production are greatly dependent upon the climatic conditions. Thus, during the 9th Five-Year Plan the difference in gross grain yields between the best and worst years in terms of cropping power amounted to 82.6 million tons (45 percent of the average annual production) and during the 10th Five-Year Plan -- 58.2 million tons (28 percent of the average annual production). The deviations in the production of coarse and succulent feed by years of the 10th Five-Year Plan amounted to 13 million tons of feed units (10 percent of the average annual production). It is not difficult to imagine the effect generated by fluctuations in the gross grain yields upon the status of affairs in livestock production. The situation is the same for other crops.

The program for carrying out extensive land reclamation work will be continued. During the 12th Five-Year Plan, land reclamation measures will constitute a high proportion of the overall volume of capital investments of a productive nature. At the same time, in addition to maintaining large volumes of land reclamation construction work, an important task will be that of improving the use of reclaimed lands and eliminating the lag in their agricultural development. Every attempt must be made to eliminate the pause which takes place in a number of zones throughout the country between the placing in operation of newly reclaimed lands and the construction of the production and non-production installations required for their efficient utilization and also their technical equipping.

Land reclamation construction experience in our country has developed a method for rapidly solving this problem. We have in mind the implementation of a complex of measures for the agricultural development of newly introduced irrigated and drained lands in the virgin land and uninhabited regions of the country, using the funds and resources of land reclamation organizations. The plans for the 11th Five-Year Plan called for the capital investments for these purposes to be increased by 43 percent and during the 12th Five-Year Plan -- by 39 percent, with 12 percent growth in new land reclamation construction work for each of the five-year plans.

This method has proven to be highly effective and we are of the opinion that it should ideally be made available for use in the nonchernozem zone of the RSFSR, when introducing newly reclaimed lands into operations not only on agriculturally undeveloped tracts but also at kolkhozes and sovkhozes when placing in operation rather large areas of newly drained and irrigated lands. A certain reduction in the placing in operation of reclaimed lands, which takes place in this regard, is compensated by their more rapid development and by improved utilization with fewer overall expenditures.

An effective means for raising soil fertility and one which is being utilized more extensively in agriculture is that of mineral fertilizers. Over the past three five-year plans the deliveries of mineral fertilizers have increased threefold and by 1990 it is expected that such deliveries will have increased by a factor of 1.7 above the figure for 1980. At the same time, the program calls for a system of measures for improving the utilization of mineral fertilizers: the accelerated development of capabilities for producing the machines and equipment required for transporting them and for mixing and applying them to the soil; strengthening the logistical base for the use of chemical processes in the interest of reducing losses to the maximum possible degree; raising the responsibility of the agrochemical service and improving its interrelationships with the kolkhozes and sovkhozes served. An increase will take place in the use of lime materials, which improve the assimilation of nutrients by the plants.

During the 1986-1990 period, the plans call for agriculture to be supplied with 2.7 tons of lime, compared to only 2 tons obtained during the years of the 8th to the 10th five-year plans, for each ton of mineral fertilizer. This will accelerate the normalization of the acidity level of the soils, although the problem will not be completely solved during the current decade.

The level of utilization of the productive capability of the land will depend to a decisive degree upon the size of and balance in the pool of tractors and agricultural machines. The power capabilities of agriculture presently exceed 600 million horsepower. If the equipment called for in the food program is made available to the rural areas, these capabilities will be increased to almost 1 billion horsepower. At the same time, work will continue aimed at improving the supply of tractors having mounted and towed machines and implements. For every horsepower of tractor usage during the 11th Five-Year Plan, 189 rubles worth of agricultural machines will be supplied, compared to 157 rubles worth during the 10th and 134 rubles worth during the 9th Five-Year Plan.

At the present time, extreme importance is being attached to protecting the products produced and delivering to the consumer all that has been furnished by the kolkhoz and sovkhoz fields and farms. This is a complicated problem. Of importance here is the need for improving the interrelationships of partners throughout the entire technological chain along which the products pass, the economic interest of the partners, strengthening the logistical base and ensuring the availability of vegetable and potato storehouses, silage and haylage installations, hay barns, hard surface roads, packaging materials and so forth. Thus the computations call for a substantial change in the proportions of capital investments of a production nature in favor of installations which provide for protection of the products and their delivery to the consumer.

Whereas capital investments of a production nature for the "agriculture" branch on the whole are increasing by 18 percent over the 10 year period, their allocations for storage installations will increase by a factor of 1.6. A considerable increase (by a factor of 2.5) is taking place in capital investments for road construction. By 1990, hard surface intra-farm roads will be available at 38 percent of the farms, compared to only 17 percent at the present time, with one farm having 5-6 kilometers of such roads.

A very important trend for the use of capital investments and material resources during the period encompassed by the food program will be that of housing and cultural-domestic construction in the rural areas. The plan for the 11th Five-Year Plan calls for an increase in capital investments in the non-production sphere of 45 percent above the level for the 1976-1980 period, with a growth of 9 percent in capital investments for agriculture on the whole.

In the future, the social trend in the use of the branch's capital investments will increase even more. It is anticipated that 25 percent of the overall volume of capital investments in agriculture, instead of 20 percent during the 1976-1980 period and 15 percent during the 1971-1975 period, will be used for the construction and equipping of non-production installations during the 12th Five-Year Plan. Against an overall increase of 31 percent in branch capital investments during the current decade and compared to the previous one, the volumes allocated for projects of a non-production nature will increase twofold.

As mentioned in the report delivered by L.I. Brezhnev during the May (1982) Plenum of the CPSU Central Committee, the plans call for roughly 160 billion rubles to be used for the social reconstruction of the rural areas during the 1980's. And subsequently L.I. Brezhnev stated: "Even according to our scales, this is a large figure. But it is not only a large figure. It represents a great policy aimed at eliminating the social differences separating the cities and rural areas."*

The complete use of the resources allocated for reconstruction of the rural areas is not a simple task. Up until now, more than one half of the entire volume of housing construction in the rural areas has been carried out using the economic method and this was possible so long as the volumes were relatively low. It would be impossible to implement the program for reorganizing the rural areas, as outlined during the May (1982) Plenum of the CPSU Central Committee, using only kolkhoz and sovkhoz resources. This would require reorienting the contractual construction organizations and enterprises of the construction industry towards carrying out the orders of the rural areas.

The decree of the CPSU Central Committee and the USSR Council of Ministers dated 24 May 1982 entitled "Measures for Improving the Housing, Communal-Domestic and Social-Cultural Living Conditions of the Rural Population" calls for the kolkhozes, sovkhozes and other agricultural enterprises and organizations to ensure the carrying out by 1990, using the contractual method, of construction-installation work in the amount of 75-80 percent of the overall limit. Over a period of 10 years the proportion of contractual work must increase by 13-18 points compared to the present level and against 2 points of actual growth for the past decade. The carrying out of the mentioned task and together with it the program for transforming the rural areas must be called for in the plan for 1983.

The changes in the proportions for developing the agrarian sector of the economy, planned for the current decade, are aimed at maintaining high rates for increasing the production of food goods throughout the country and achieving considerable improvements in the effectiveness of functioning of all elements of the agro-industrial complex. The average annual gross output production for agriculture during the two five-year plans will increase by 27.7 percent compared to 23.4 percent for the same preceding period. It should be borne in mind that the annual increase in the country's population does not exceed 1 percent. These ratios reflect the peculiar nature of the food problem during this modern stage. It derives from the fact that the overall caloric content of the food ratio presently exceeds somewhat the rational norms and yet its structure does not meet the requirements of the medical science, since less fruit and vegetables and livestock products are being consumed than called for in the norms. As the ration structure draws closer to the scientific norms, the expenses of society for maintaining it increase sharply. Thus the caloric content of 1 kilogram of pork is equivalent to the caloric content of 1 kilogram of grain. But in order to obtain 1 kilogram of pork, it is necessary to expend 10 kilograms of grain and the overall expenditures for 1,000 calories in meat are higher by a factor of 15-20 than that for grain.

---

* "Prodovol'stvennaya programma SSSR na period do 1990 goda i mery po yeyë realizatsii," p 14.

The principal task of the food program consists of ensuring that the population is continuously supplied with all types of food goods. An improvement in the balance and proportional development of all elements of agroindustrial production represents one of the most important conditions for successfully carrying out this task.

COPYRIGHT: Izdatel'stvo "Ekonomika", "Planovoye khozyaystvo", 1982

7026
CSO: 1824/19

FUEL CONSERVATION IN RSFSR AGRICULTURAL EQUIPMENT ASKED

Moscow SEL'SKAYA ZHIZN' in Russian 24 Aug 82 p 2

/Article by I. Popov, deputy chief of the Main Administration of Specialized Technical Service of the RSFSR Goskomsel'khoztekhnika: "A Drop Saves a Ton"/

/Text/ The USSR Food Program devotes special attention to the need for more economical expenditure of fuels and lubricants, including in agriculture. This is quite understandable. After all, agricultural production, having a powerful machine and tractor fleet, is one of the largest consumers in the country of gasoline, diesel fuel, oils and other petroleum products. In our day it is simply unthinkable to work in agriculture without them.

Economizing on fuel, of course, depends primarily on the application of advanced methods of utilizing the machine and tractor fleet on the kolkhozes and sovkhozes and increased skills of the machine operators. Of no less importance is the observance of requirements that are placed on the storage of petroleum products at petroleum bases, during operations for receiving, dispatching and fueling the vehicles, and also the organization of the repair and technical servicing of petroleum warehouse equipment. And here it is very important to be well aware of the reasons for losses of petroleum products and to skillfully find ways of preventing or eliminating them.

Not everyone knows, for example, that up to 75-80 percent of the fuel is lost from evaporation. This takes place because of a lack of or inadequate sealing of the reservoirs and means of transportation. Even a so-called hairline crack in a reservoir allows evaporation of up to 60 liters of gasoline a month from one running meter. During a year this figure is increased many fold. Or another example. From a loose connection of the pipelines, plugs or faucets which allow one drop to escape each second, during a day up to 4 kg of fuel escape from the reservoir, and during a year--about 1.5 tons.

The color painted on the surface of the reservoir in which the fuel is kept has a great influence on losses. The following figures are convincing. While in a reservoir that is painted black the fuel is warmed by the sun up to 30 degrees, if it is painted grey it is warmed up to 14 degrees, and if it is painted the color of aluminum--only to 11 degrees. And the higher the temperature of the fuel, the more intensive its evaporation. When storing gasoline in an unpainted reservoir losses increase 1.5-fold as compared to when it is stored in a white container.

The intensiveness of evaporation also depends on how full the reservoir is filled with fuel. For example, more than 20 kg of gasoline are lost each year from a container of 10 cubic meters that is 90 percent full. And a reservoir that is only one-fifth full of fuel losses almost six times as much.

Losses from leakage and overflow, which reach up to 20-25 percent of the overall losses of petroleum products at warehouses and refueling points, are brought about by the unsatisfactory technical condition of the equipment and also by the carelessness of petroleum workers. These losses can be completely eliminated if preventive measures are taken promptly and also if discipline is strengthened and the organization of the work of the petroleum enterprises is improved.

Careless storage of fuel and lubricants not only leads to direct losses, but also causes their quality to deteriorate. It has been calculated that the use of substandard petroleum products that have lost their initial properties as a result of violations of the rules of transportation and storage increase the amount of idle time of machines for technical reasons by 20-25 percent. For this same reason the capacities of engines decrease by 15 percent. Moreover, there is an overexpenditure of petroleum products of 8-12 percent and the cost of repair and technical servicing increases by 40-60 percent. All this, in the last analysis, considerably reduces the effectiveness of the utilization of technical equipment.

Agriculture in the Russian Federation now has about 90,000 fuel and lubricant distribution pumps, more than 500,000 reservoirs, and a large number of receiving and distribution pipes. The technical servicing of a large part of this equipment is the responsiblities of subdivisions of Goskomsel'khoztekhnika. Thus last year on the kolkhozes and sovkhozes and at other agricultural enterprises this work was evaluated at a sum of 10.8 million rubles, which is three times as much as in 1978. This year there is to be a further increase in technical servicing. At the present time this work is being done by more than 1,000 rayon Sel'khoztekhnika organizations, which have created special brigades of 2-6 people. Each brigade is given a mobile means of technical servicing and all the necessary materials. They work under contracts with the farms.

The changeover to specialized technical servicing has had a positive effect on economizing on fuel and lubricants on the farm. For example, the expenditure of diesel fuel per one conventional hectare decreased by a half kilogram last year as compared to 1979 and the expenditure of gasoline per one ton-kilometer decreased by almost 20 grams.

Positive experience in organizing technical servicing and repair of petroleum warehouse equipment has been accummulated by the rayon Sel'khoztekhnika organizations of Saratov, Lipetsk and Ivanovo oblasts, Stavropol Kray and many other associations. I should like to discuss in a little more detail the work of the rayon Sel'khoztekhnika organizations of Rostov Oblast. Here, in our opinion, is something to learn from. All brigades of the association have mobile automotive shops of the type MPR-7360, "petroleum enterprise service" or shops adapted for these purposes that have the necessary means of technical servicing, spare parts, components, replacement aggregates and also installations for washing and cleaning reservoirs and equipment for pumping fuel. New petroleum warehouses are being constructed successfully here and old ones are being reconstructed.

Just in recent years the oblast has reconstructed 18 of these petroleum warehouses. All the containers have been cleaned, painted and calibrated. This, of course, has had the most positive effect on economizing on fuel and lubricants on the farms. As a result of savings on them they have obtained more than 35,000 rubles in profit. Moreover, technical equipment has been utilized more efficiently on the fields and farms.

A large amount of work to fight against losses of petroleum products is also being done in the Tatar ASSR where the Berezovskoye special division has been created for purposes of concentration and specialization of technical servicing and repair of petroleum warehouse equipment. In its shop, which has all the necessary equipment, they have organized the repair of fuel and lubricant distribution pumps, receiving and distribution pipes, other pumps, taps, throttle valves and other parts and mechanisms. The repaired equipment is regularly inspected. They have also arranged here the manufacture of lightening rods, distribution equipment, stairways, surfaces, reinforced concrete foundations for containers, and metal mesh fences for the territory of the petroleum warehouses.

In order to carry out work for technical servicing, eliminating malfunctions or replacing equipment that has broken down at petroleum warehouses on the kolkhozes and sovkhozes the specialized division has created special brigades in 30 rayons of the autonomous republic. They have mobile shops, sets of welding equipment, instruments for checking the seals on reservoirs and regulating the throttle valves, devices for pressure testing the pipelines, installations for pumping fuel and painting reservoirs and other instruments and devices. Each brigade has a supply of fuel and lubricant distribution pipes, pumps, liquid measurement devices and electric engines.

Taking into account the complexity and the specific nature of the work with petroleum products, they have organized a training class for workers in technical servicing of equipment at petroleum warehouses and refueling facilities of the kolkhozes and sovkhozes.

As a result of prompt, high-quality technical servicing and repair of petroleum warehouse equipment and also a number of preventive measures on the kolkhozes, sovkhozes and interfarm agricultural enterprises of the Tatar ASSR, the expenditure of diesel fuel per conventional standard hectare decreased by eight percent last year as compared to 1979. The tractors have performed work on more than 1.1 million hectares and they have used 8,300 tons less diesel fuel.

11772
CSO: 1824/551

END

END OF FICHE

DATE FILMED

Nov. 20, 1982